

## Claims

1. A method of producing a thin film by plasma CVD on an inner wall surface of a substrate facing a space formed in said substrate, said method comprising the steps of:

providing said substrate in a chamber for plasma CVD; and

flowing a gas for plasma reaction into said space and applying a pulse voltage on said substrate without substantially applying a direct bias voltage on said substrate to form said thin film on said inner wall surface.

2. The method of claim 1, wherein a difference of a pressure is generated in the longitudinal direction of said substrate.

3. The method of claim 1, wherein said substrate has one opening therein communicating with said space.

4. The method of claim 1, wherein said thin film comprises diamond or diamond like carbon.

5. A system for producing a thin film by plasma CVD on an inner wall surface of a substrate facing a space formed in said substrate, said system comprising:

a chamber for plasma CVD and for containing said substrate;

a supply hole for supplying a gas for plasma reaction into said chamber; and

a means for applying a pulse voltage on said substrate,

wherein said gas is flown into said space and said means applies a pulse voltage on said substrate without substantially applying a direct bias voltage on said substrate to form said thin film on said inner wall surface.

6. The system of claim 5, further comprising a means for generating a difference of a pressure in the longitudinal direction of said substrate.

7. The system of claim 5, wherein said substrate has one opening

therein communicating with said space.

8. The system of claim 5, wherein said thin film comprises diamond or diamond like carbon.

BEST AVAILABLE COPY